

ONKYO SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL R-A5/A7



Silver model

SUP	230V AC, 50Hz
SUW	120V or 220V~230V AC, 50/60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK Δ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.


TABLE OF CONTENTS


Service procedures.....	2
Block diagrams.....	3
Microprocessor-connection diagram.....	6
Microprocessor terminal descriptions.....	7
IC block diagrams and descriptions.....	8
Adjustment procedures.....	11
Pc board view from bottom side.....	13
Schematic diagram.....	15
Pc board view from bottom side.....	23
Exploded view.....	25
Parts list.....	26
Printed circuit board-parts list.....	27
Specifications.....	30

ONKYO®
AUDIO COMPONENTS

SERVICE PROCEDURES

1. Replacing the fuses

 This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.

 Ce symbole indique que le fusible utilise est a rapide. Pour une protection permanente, n'utiliser que des fusibles de meme type. Ce dernier est indique la qu le present symbol est appose.

CIRCUIT NO.	PART NO.	DESCRIPTION
F901	252075	2.5A-SE-EAK,Primary <W>
F902	252071	1.25A-SE-EAK,Primary
F903	252071	1.25A-SE-EAK,AC outlet <P>

NOTE: <P>:230V model only
<W>:Worldwide model only

2. To Initialize the unit

This device employs a microprocessor to perform various functions and operations. If interference generated by an external power supply, radio wave, or other electrical source results in accident which causes the specified operations and functions to operate abnormally.

To perform a result, please follow the procedure below.

1. Press and hold down SUPER BASS button, then press POWER button.
2. After the all segments on the fluorescent tube light on, press POWER button.
3. After "CLEAR" on the fluorescent tube is displayed, remove the power supply cord from the outlet.

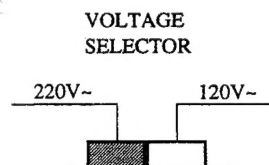
3. Change of voltage

Worldwide models are equipment with a voltage selector to conform with local power supplies. This switch is located on the back panel.

Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on.

This switch is set to 220V at the factory. Voltage is changed by

sliding the groove in the switch with the screwdriver to the right or left. Confirm that the switch has been moved all the way to the right or left before turning the power switch on.



4. Memory preservation

This unit does not require memory preservation batteries.

A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged.

The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory, the power switch must be turned on and off a few times each month the keep the back-up system operative.

The period of the time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorted when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

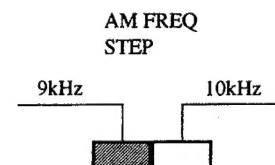
5. Setting the tuning step frequency

Worldwide models are equipped with a step band selector switch. This switch is located on the back panel. This switch is set to 9 kHz at the factory, but may have to be reset to 10 kHz depending on the area where the unit is used.

AM band step

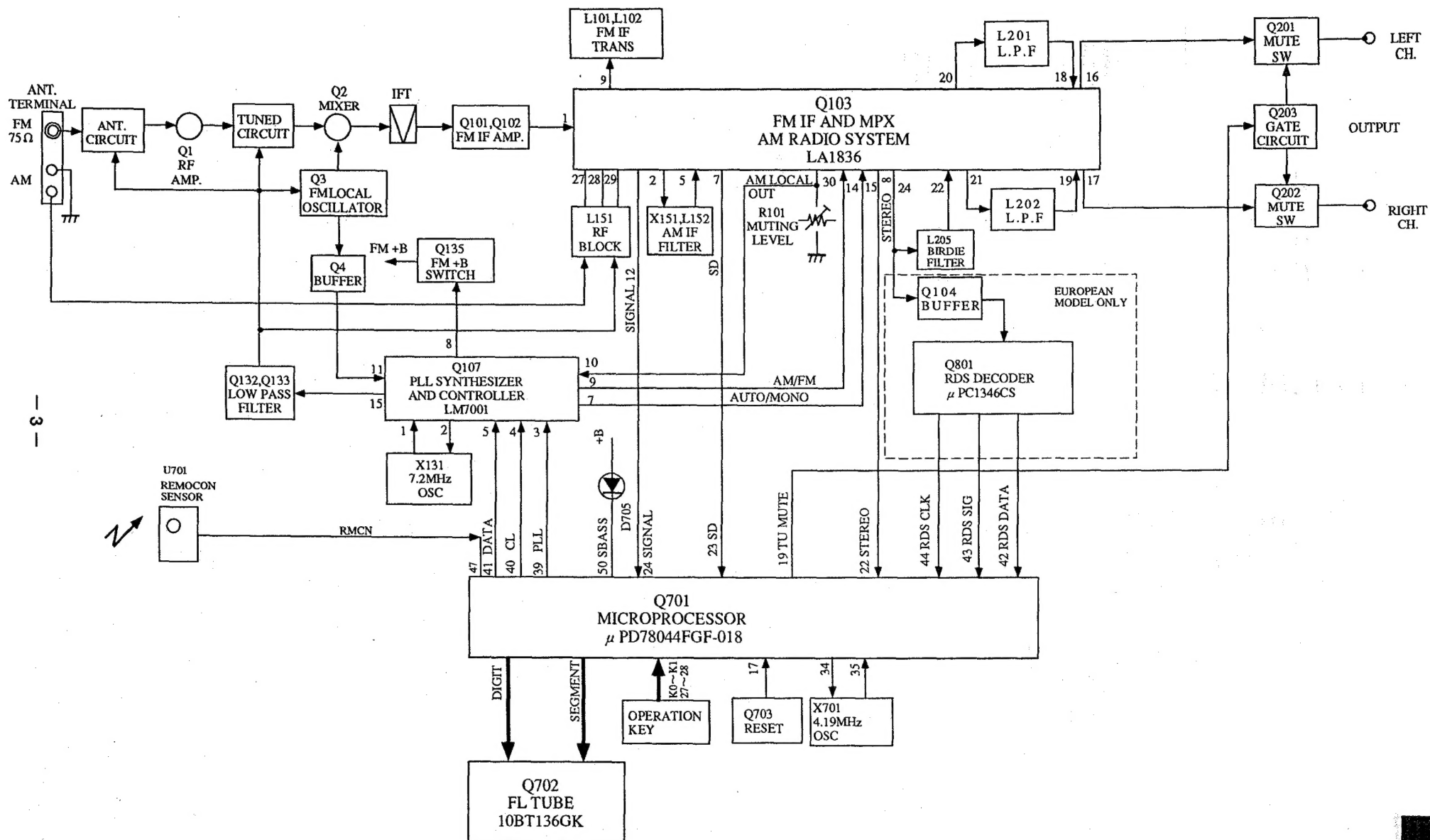
Europe: 9 kHz

U.S.A.: 10 kHz

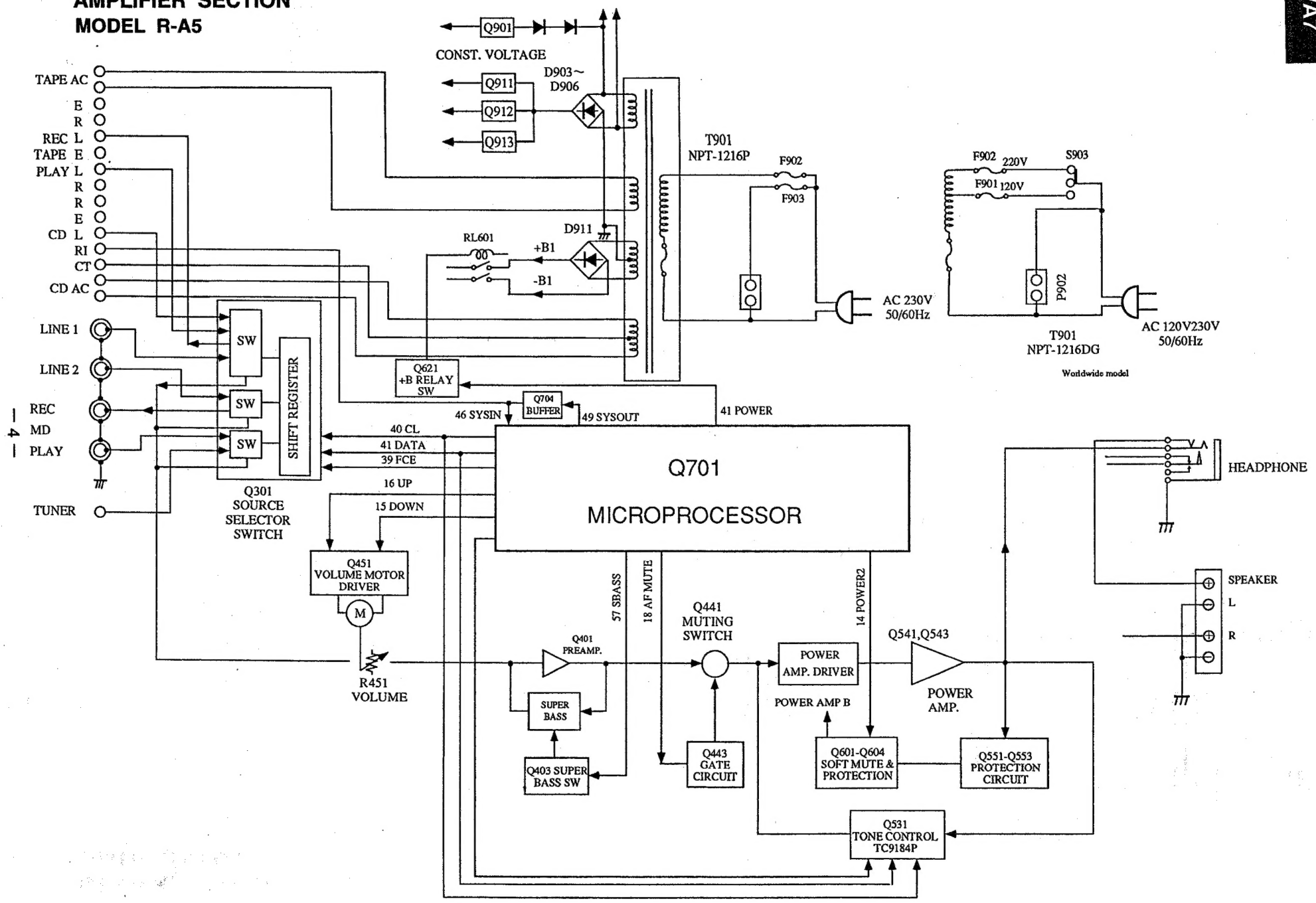


BLOCK DIAGRAMS

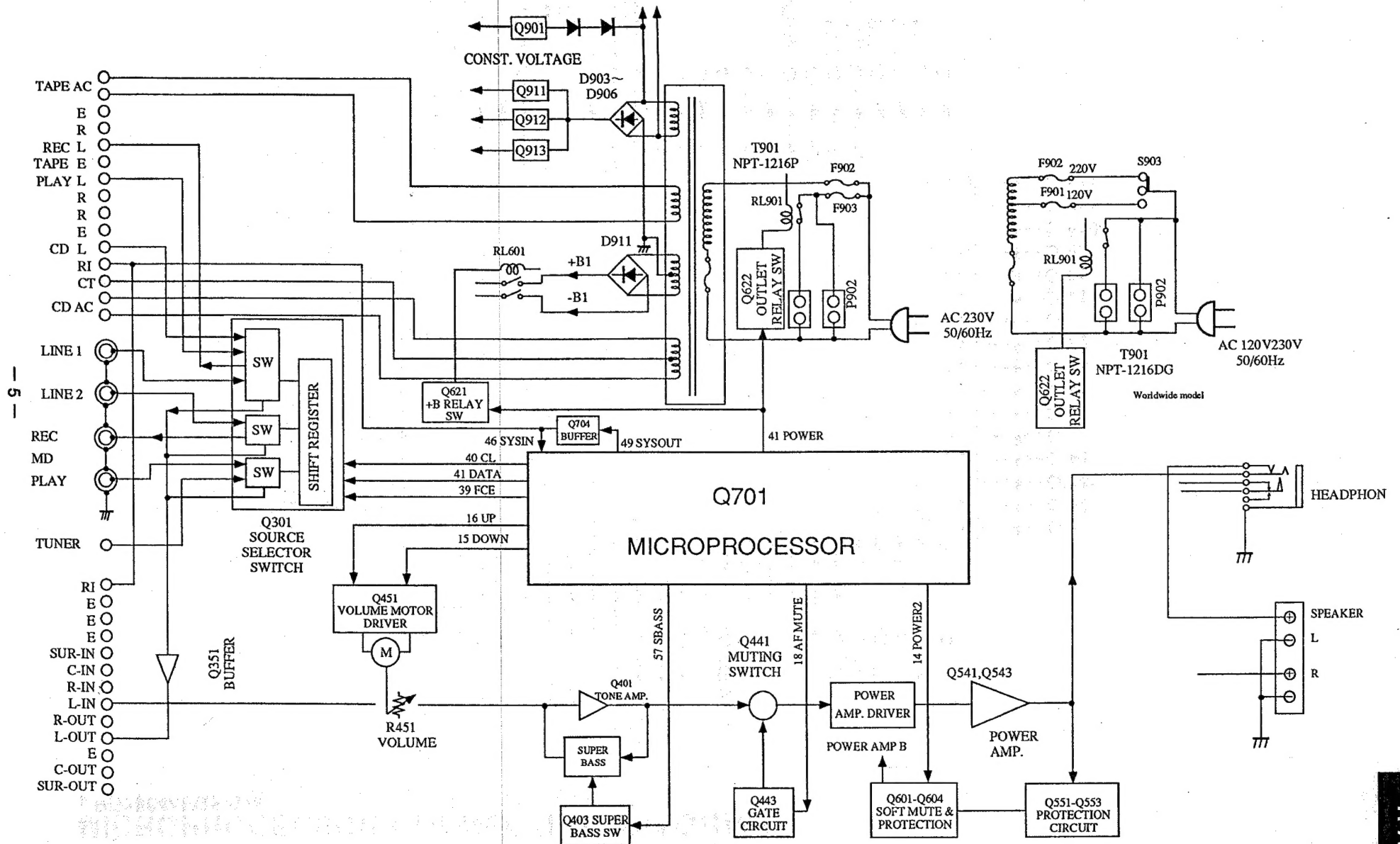
TUNER SECTION



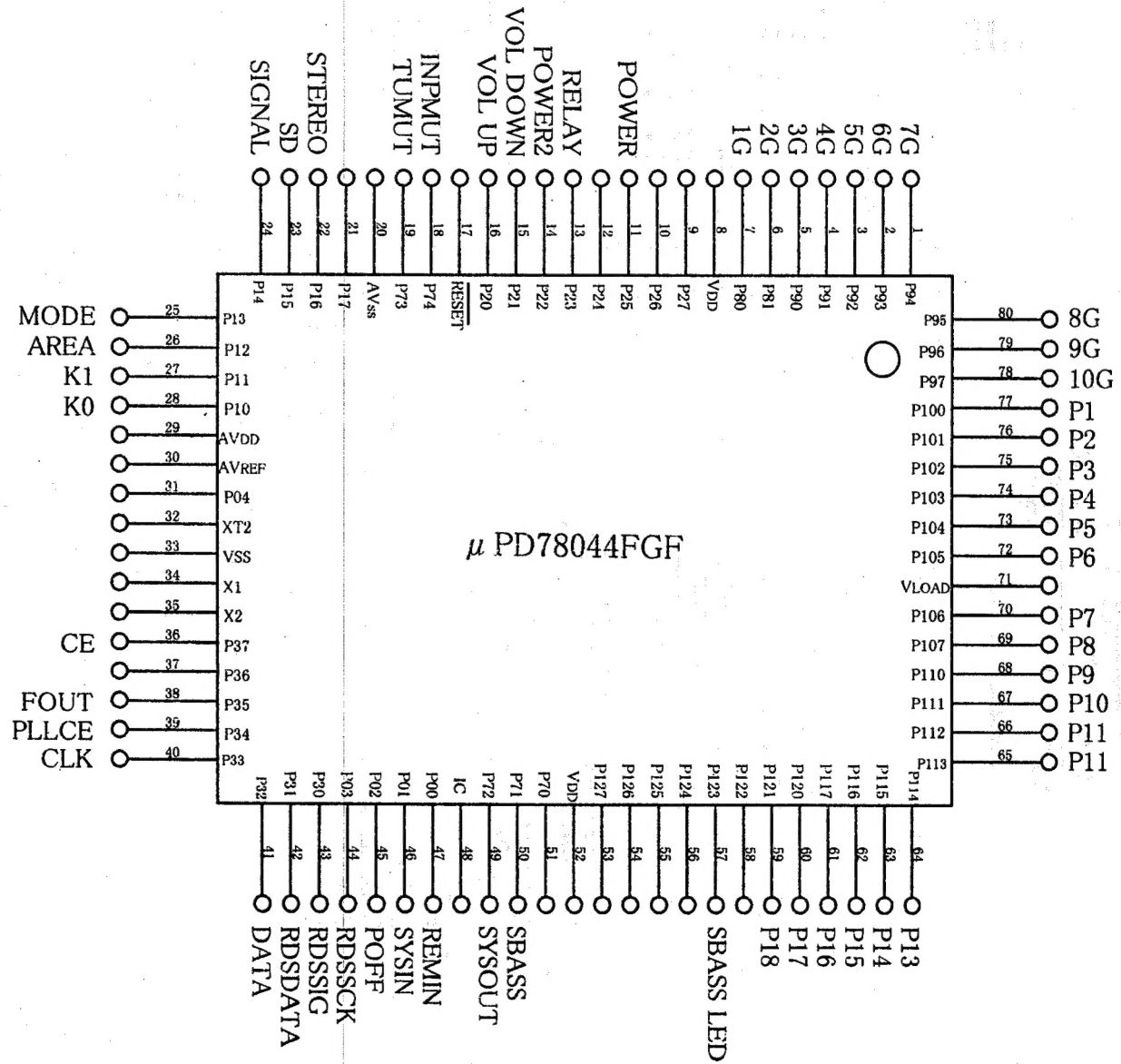
AMPLIFIER SECTION MODEL R-A5



MODEL R-A7



MICROPROCESSOR-CONNECTION DIAGRAM
μ PD78044FGF-018



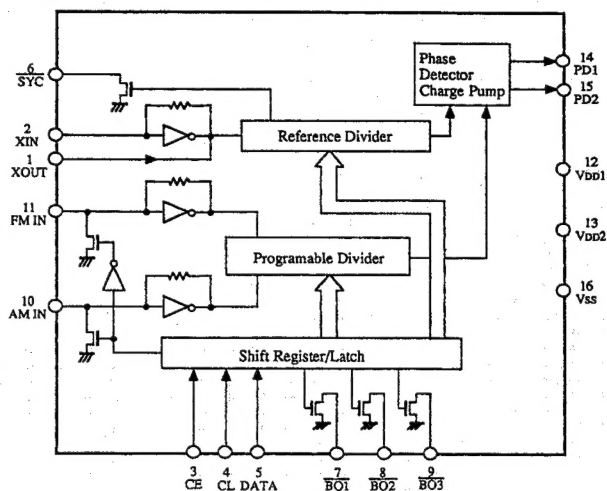
MICROPROCESSOR-TERMINAL DESCRIPTIONS

Pin No.	Symbol	Function	Description															
1	P94/FIP6	7G	Grid output terminal. On at the high level															
2	P93/FIP5	6G	Grid output terminal. On at the high level															
3	P92/FIP4	5G	Grid output terminal. On at the high level															
4	P91/FIP3	4G	Grid output terminal. On at the high level															
5	P90/FIP2	3G	Grid output terminal. On at the high level															
6	P81/FIP1	2G	Grid output terminal. On at the high level															
7	P80/FIP0	1G	Grid output terminal. On at the high level															
8	VDD	VDD	Positive power supply terminal (+5V)															
9	P27/SCK0	NC	Not used															
10	P26/SO0/SB1	NC	Not used															
11	P25/SI0/SB0	POWER	Power amplifier control output.															
12	P24/BUSY	NC	Not used															
13	P23/STB	RELAY	Speaker relay control output terminal															
14	P22/SCK1	POWER2	Power switch control output. Control the AC outlet relay and DC power supply.															
15	P21/SO1	VOLUP	Volume control output terminal															
16	P20/SI1	VOLDOWN	Control the volume as shown below table by remote control signal. <table><tr><td>Operation</td><td>VOLUP</td><td>VOLDOWN</td></tr><tr><td>Stop</td><td>H</td><td>H</td></tr><tr><td>VOLUME UP</td><td>H</td><td>L</td></tr><tr><td>VOLUME DOWN</td><td>L</td><td>H</td></tr><tr><td>POWER OFF</td><td>L</td><td>L</td></tr></table>	Operation	VOLUP	VOLDOWN	Stop	H	H	VOLUME UP	H	L	VOLUME DOWN	L	H	POWER OFF	L	L
Operation	VOLUP	VOLDOWN																
Stop	H	H																
VOLUME UP	H	L																
VOLUME DOWN	L	H																
POWER OFF	L	L																
17	RESET	RESET	System reset terminal															
18	P74	INPMUT	Muting control output terminal for amplifier section															
19	P73	TUMUT	Muting control output terminal for tuner section															
20	AVSS	AVSS	Ground terminal for A/D converter															
21	P17/ANI7	NC	Not used															
22	P16/ANI6	STEREO	Stereo broadcast detection input terminal															
23	P15/ANI5	SD	Station detection input terminal															
24	P14/ANI4	SIGNAL	Signal strength detection input terminal															
25	P13/ANI3	MODE	Initializing input terminal Change the mode by the analog voltage.															
26	P12/ANI2	AREA	Initializing input terminal for frequency range of FM/AM Change the frequency range and band step by the analog voltage.															
27	P11/ANI1	K1	Operation key connection terminal															
28	P10/ANI0	K0																
29	AVDD	AVDD	Analog power supply for A/D converter															
30	AVREF	AVREF	Reference voltage terminal for A/D converter															
31	P04/XT1	XT1	Crystal resonator connection terminal for subsystem clock															
32	XT2	XT2	Not used															
33	VSS	VSS	Ground terminal															
34	X1	X1	Crystal resonator connection terminal for main system clock															
35	X2	X2	Connect the 4.19MHz crystal resonator between X1 and X2.															
36	P37	CE	Strobe output terminal. Connect to the terminal STB of function switch and tone control IC															
37	P36/BUZ	NC	Not used															

Pin No.	Symbol	Function	Description
38	P35/PCL	FOUT	Frequency output terminal for clock adjustment
39	P34/TI2	PLL	Connect to the terminal PLL of synthesized IC.
40	P33/TI1	CL	Clock output terminal
41	P32/TO2	DATA	Data output terminal
42	P31/TO1	RDSDATA	Data input terminal from RDS decoder
43	P30/TO0	RDSSIG	RDS broadcast detection input terminal
44	P03/INTP3/C10	RDSSCK	Clock input terminal from RDS decoder
45	P02/INTP2	POFF	Detection input terminal for stoppage of power current Operate when the stoppage of power current more than 10 μ sec
46	P01/INTP1	SYSIN	System code input terminal
47	P00/INTP0/TI0	REMIN	Signal input terminal for remote control transmitter
48	IC	IC	Internal connection terminal
49	P72	SYSOUT	System code output terminal;
50	P71	SBASS LED	SUPER BASS indicator output terminal
51	P70	NC	Not used
52	VDD	VDD	Positive power supply (+5V)
53	P127/FIP33	NC	Not used
54	P126/FIP32	NC	Not used
55	P125/FIP31	NC	Not used
56	P124/FIP30	NC	Not used
57	P123/FIP29	SBASS	SUPER BASS indicator control output terminal
58	P122/FIP28	NC	Not used
59	P121/FIP27	P18	Segment output terminal
60	P120/FIP26	P17	Segment output terminal
61	P117/FIP25	P16	Segment output terminal
62	P116/FIP24	P15	Segment output terminal
63	P115/FIP23	P14	Segment output terminal
64	P114/FIP22	P13	Segment output terminal
65	P113/FIP21	P12	Segment output terminal
66	P112/FIP20	P11	Segment output terminal
67	P111/FIP19	P10	Segment output terminal
68	P110/FIP18	P9	Segment output terminal
69	P107/FIP17	P8	Segment output terminal
70	P106/FIP16	P7	Segment output terminal
71	VLOAD	VLOAD	Pull-down resistor connection terminal for FIP controller and driver
72	P105/FIP15	P6	Segment output terminal
73	P104/FIP14	P5	Segment output terminal
74	P103/FIP13	P4	Segment output terminal
75	P102/FIP12	P3	Segment output terminal
76	P102/FIP11	P2	Segment output terminal
77	P102/FIP10	P1	Segment output terminal
78	P97/FIP9	10G	Grid output terminal
79	P96/FIP8	9G	Grid output terminal
80	P95/FIP7	8G	Grid output terminal

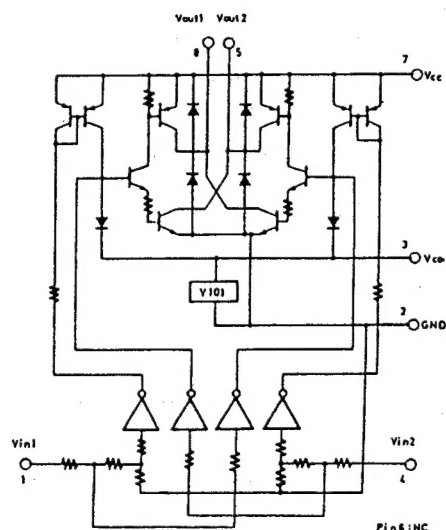
IC BLOCK DIAGRAMS AND DESCRIPTIONS

LM7001 (PLL Synthesized and Controller)



Pin No.	Terminal	Description
1	XOUT	Connect the 7.2MHz crystal resonator.
2	XIN	
3	CE	Chip enable terminal. Connect to the terminal PLL of the microprocessor.
4	CL	Serial clock input terminal. Connect to the terminal ACL of the microprocessor.
5	DATA	Serial data input terminal. Connect to the terminal ADA of the microprocessor.
6	SYN	Not used.
7	AUTO/MONO	AUTO/MONO selection terminal. Auto at the low level.
8	FM	FM selection terminal. FM at the low level.
9	AM	AM selection terminal. AM at the low level.
10	AMIN	AM local oscillator signal input terminal
11	FMIN	FM local oscillator signal input terminal
12	VDD1	Power supply terminal for back-up.
13	VDD2	Power supply terminal
14	PD1	Charge pump output terminal
15	PD2	Charge pump output terminal
16	VSS	Ground terminal

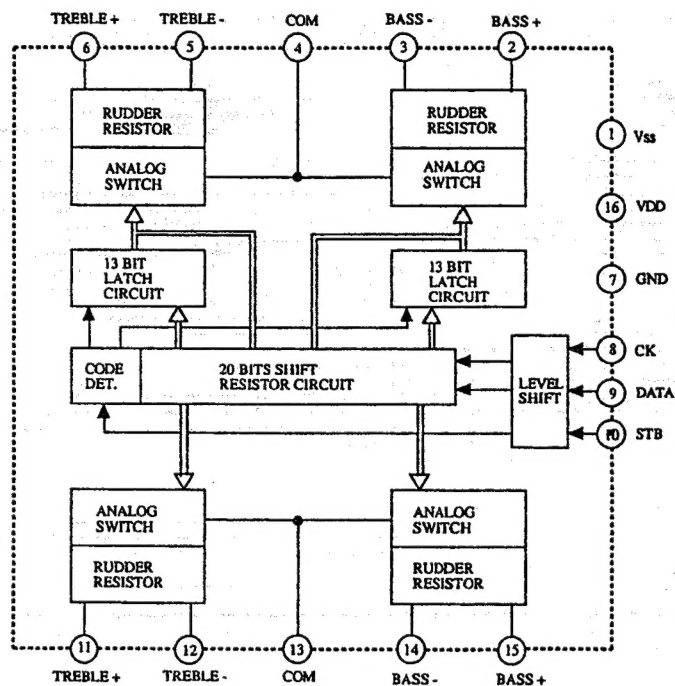
LB1639 (Volume Motor Driver)



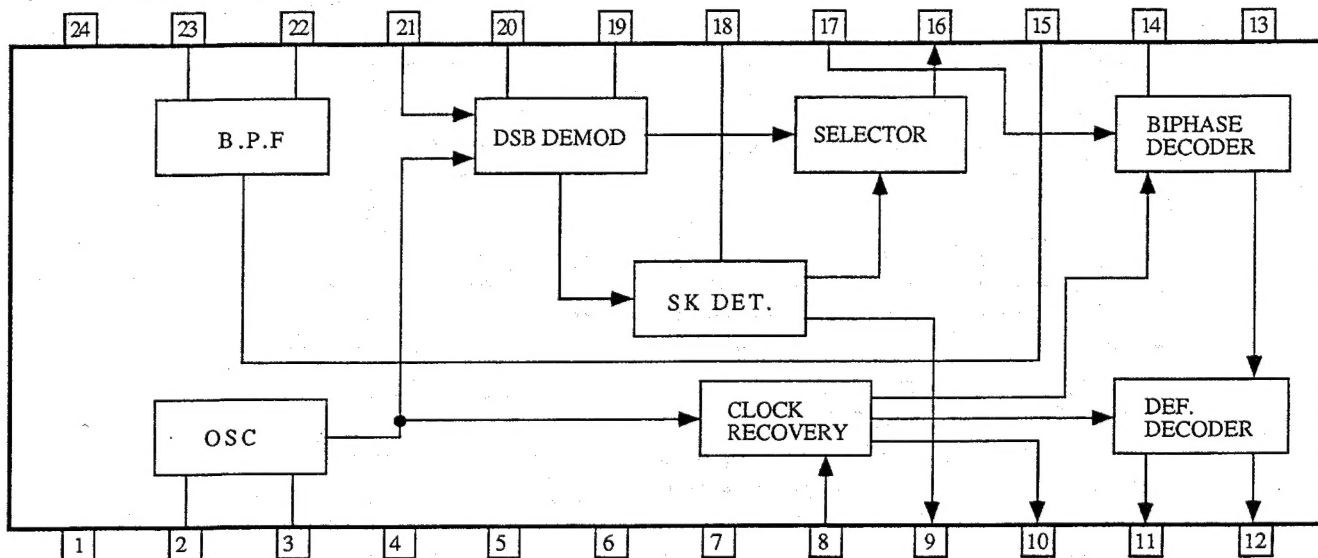
References



TC9184P (Electro Volume)



No.	Symbol	Function
1	Vss	Power supply terminal for analogue section
16	VDD	
2,15	BASS +	Volume terminals
3,14	BASS -	
5,12	TREBLE -	
6,11	TREBLE +	
4,13	COM	
7	GND	Ground terminal for digital section
8	CK	Clock input terminal to take in the data of terminal DATA.
9	DATA	Data input terminal
10	STB	Strobe input terminal

 μ PC1346CS (RDS Decoder)

ADJUSTMENT PROCEDURES

Preparation

1. Input

FM mono: 1kHz, 75kHz devi., 60dB/μV
FM stereo: 1kHz, 67.5kHz devi., 60dB/μV
Pilot signal 19kHz 7.5kHz devi.

AM: 400Hz, 30% mod.

1.FM ADJUSTMENT

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM IF/RF	1	Fig.1	99.0MHz 1kHz 75kHz devi. 65dBf(60dB)	—	99.0MHz	DC voltmeter	L101	0±20mV	FM MUTE/MODE switch: MONO Repeat the steps 1 and 3 until no further adjustment is necessary.
	2					AC voltmeter	IFT on the front end	Maximum	
	3					Distortion analyzer	L102	Minimum	
Stereo Distortion		Fig.2	99.0MHz Ext. mod.65dBf(60dB)	Channel L or R 1kHz	99.0MHz	Distortion analyzer	IFT on the front end	Minimum	Don't turn more than ±180°
Muting Level		Fig.2	99.0MHz 19.2dBf(14dB)	—	99.0MHz	Oscilloscope	R101	Signal output	
RDS		Fig.3	99.0MHz Ext. mod.60dB	RDS data or 57kHz 3% devi.	99.0MHz	Oscilloscope	R801	Maximum	European model only

2.AM ADJUSTMENT

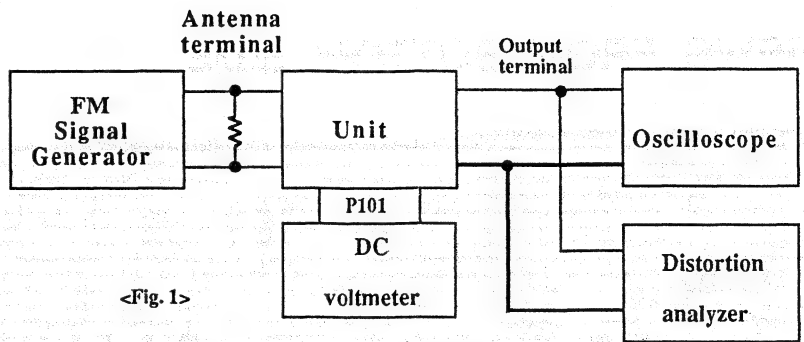
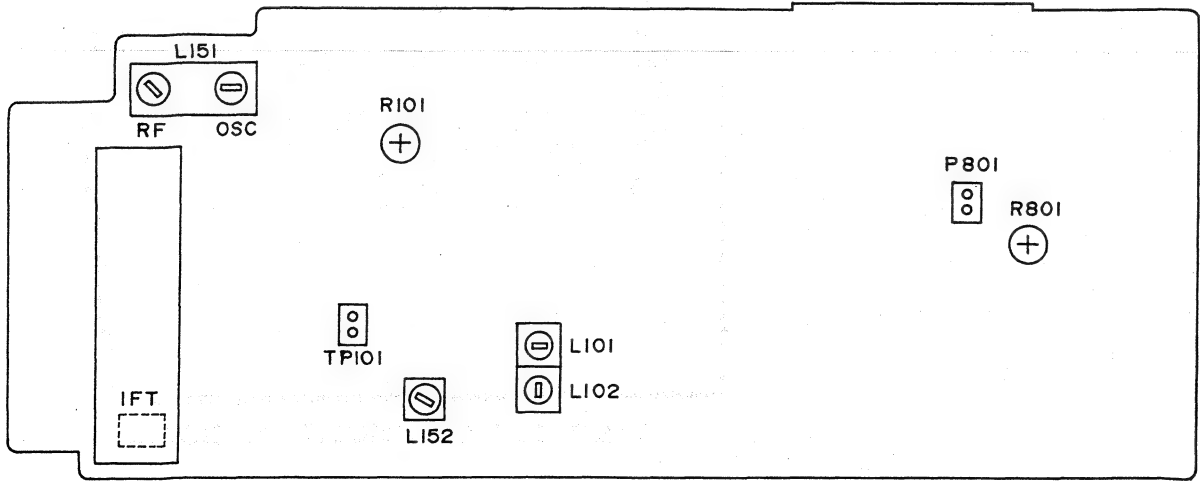
Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		522kHz (531kHz)	Digital DC voltmeter	OSC coil on RF block L151	1.3±0.1V
2	603kHz 400Hz 30% mod. 60dB/m	603kHz	AC voltmeter	RF coil on RF block L151	Maximum
3	990kHz 400Hz 30% mod. 60dB/m	990kHz	AC voltmeter	L152	Maximum

(): Worldwide model

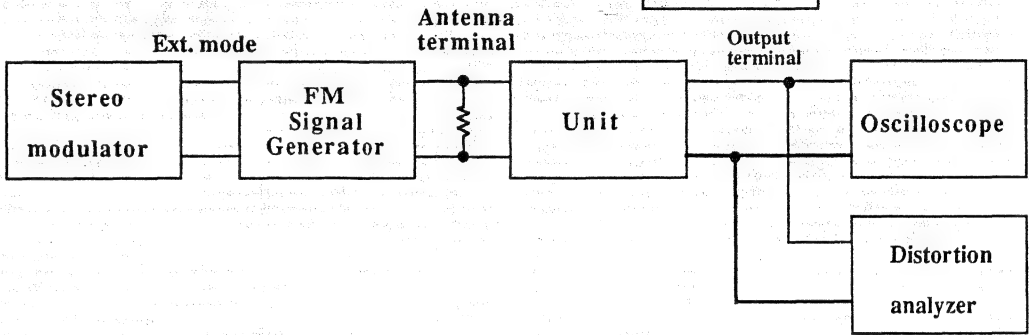
Reference Specification
FM tuned voltage: 87.5MHz~108.0MHz
More than 1.3V ~ Less than 10V
AM tuned voltage: 522kHz~1611kHz
1.3±0.4V~7.3±0.5V (230V model)
AM tuned voltage: 531kHz~1602kHz
1.3±0.4V~7.3±0.5V (Worldwide model)

3.CLOCK FREQUENCY ADJUSTMENT

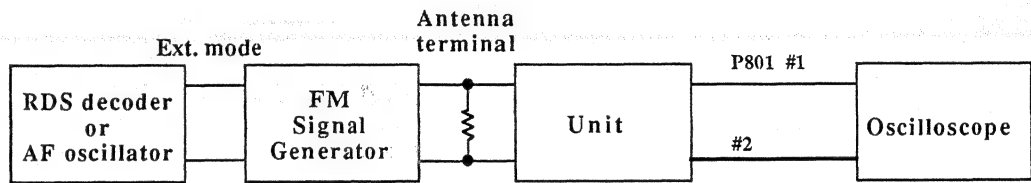
1. Connect the frequency counter to the terminal P771.
2. Press and hold down the SUPER BASS button, then press the POWER button.
(After the all segment of FL tube lights on, the unit is turned to the clock adjustment mode.)
3. Adjust the trimming capacitor C706 so that the frequency becomes 524.288±1Hz.



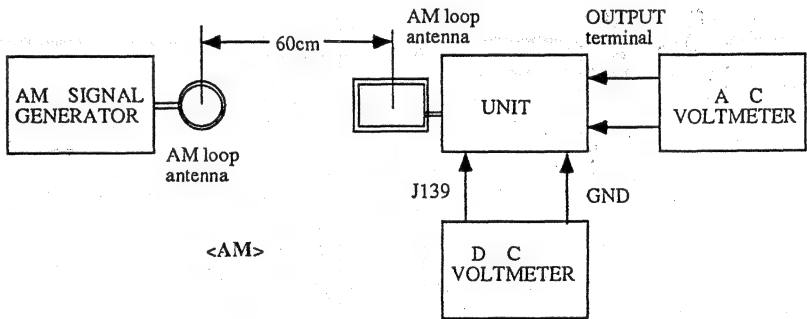
<Fig. 1>



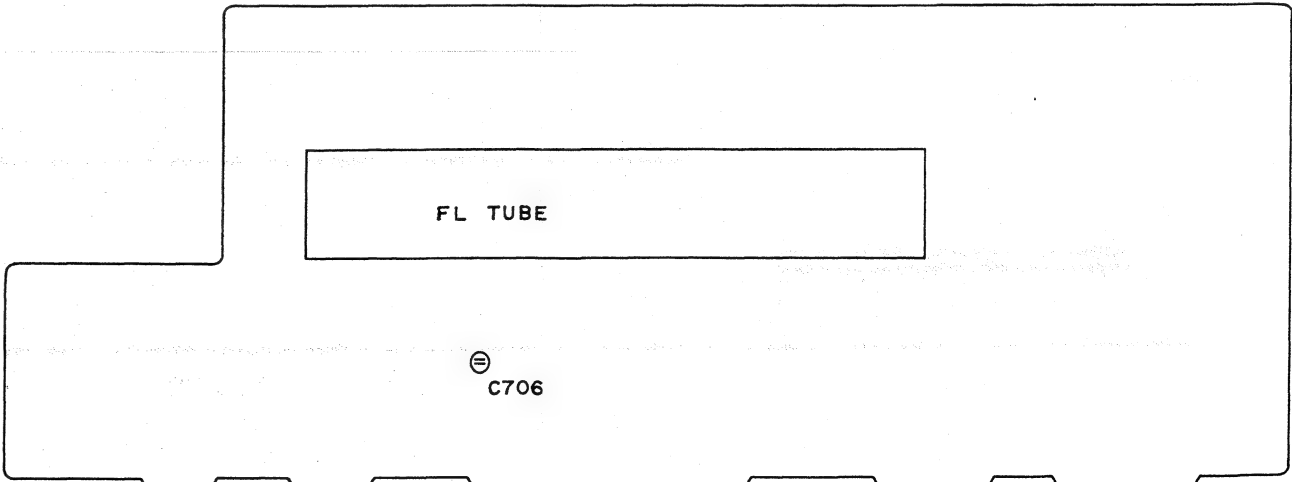
<Fig. 2>



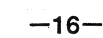
<Fig. 3>



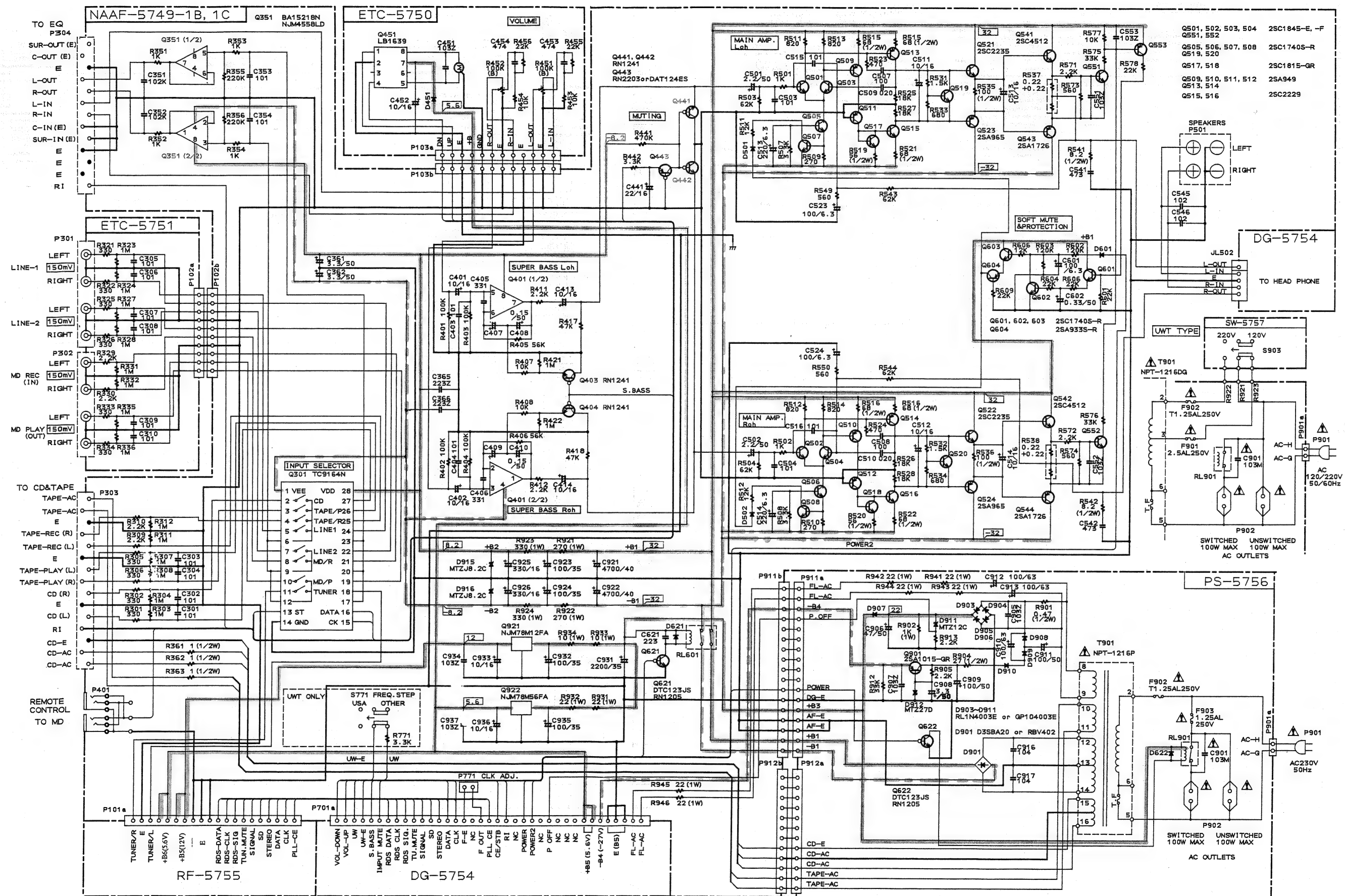
<AM>



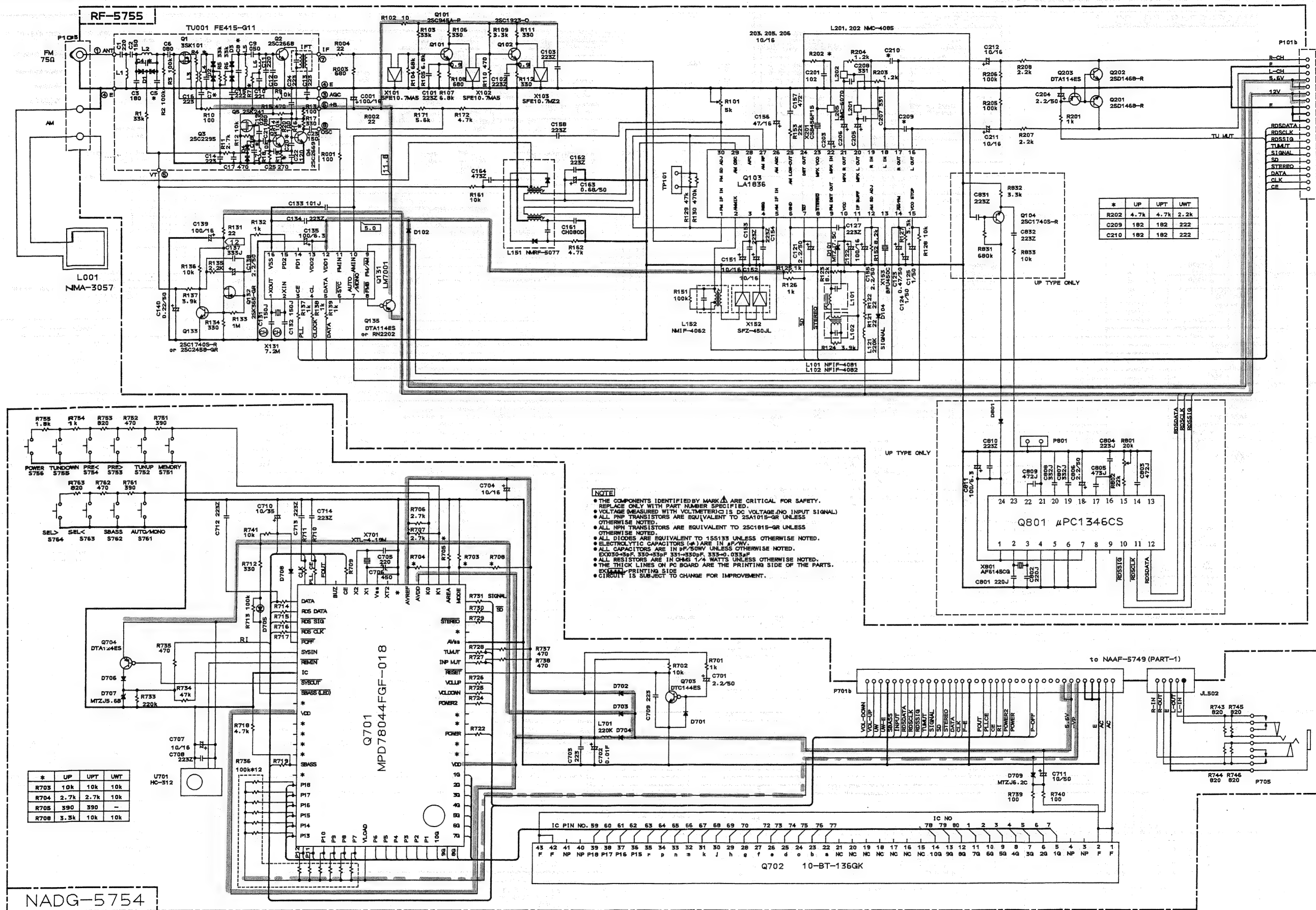
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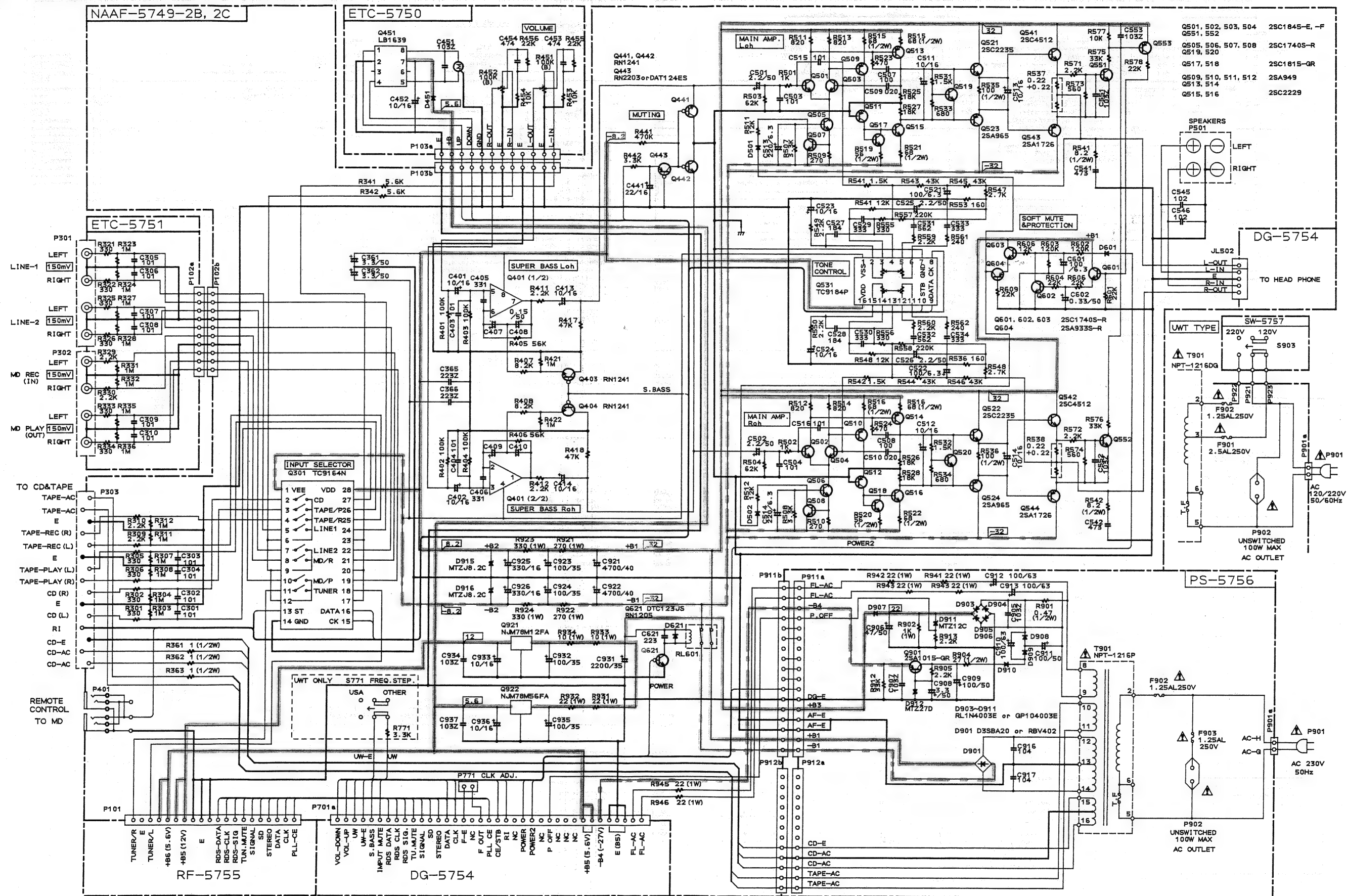
SCHEMATIC DIAGRAM MODEL R-A7



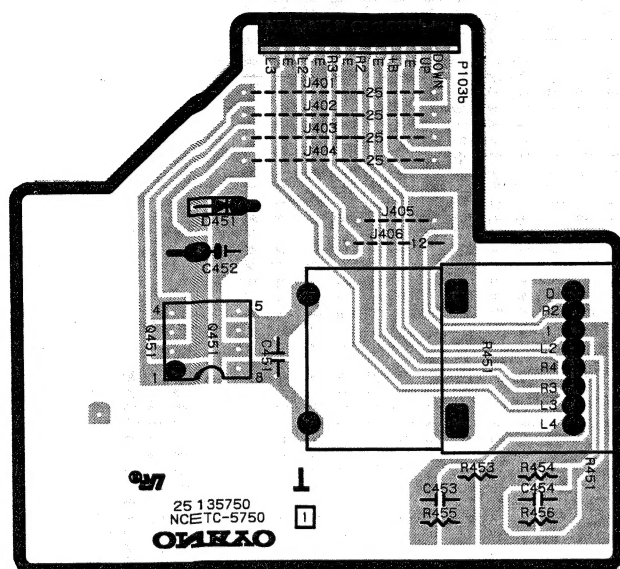
SCHEMATIC DIAGRAM MODEL R-A5



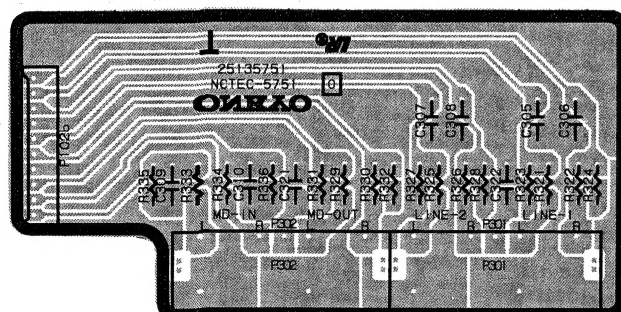
SCHEMATIC DIAGRAM MODEL R-A5



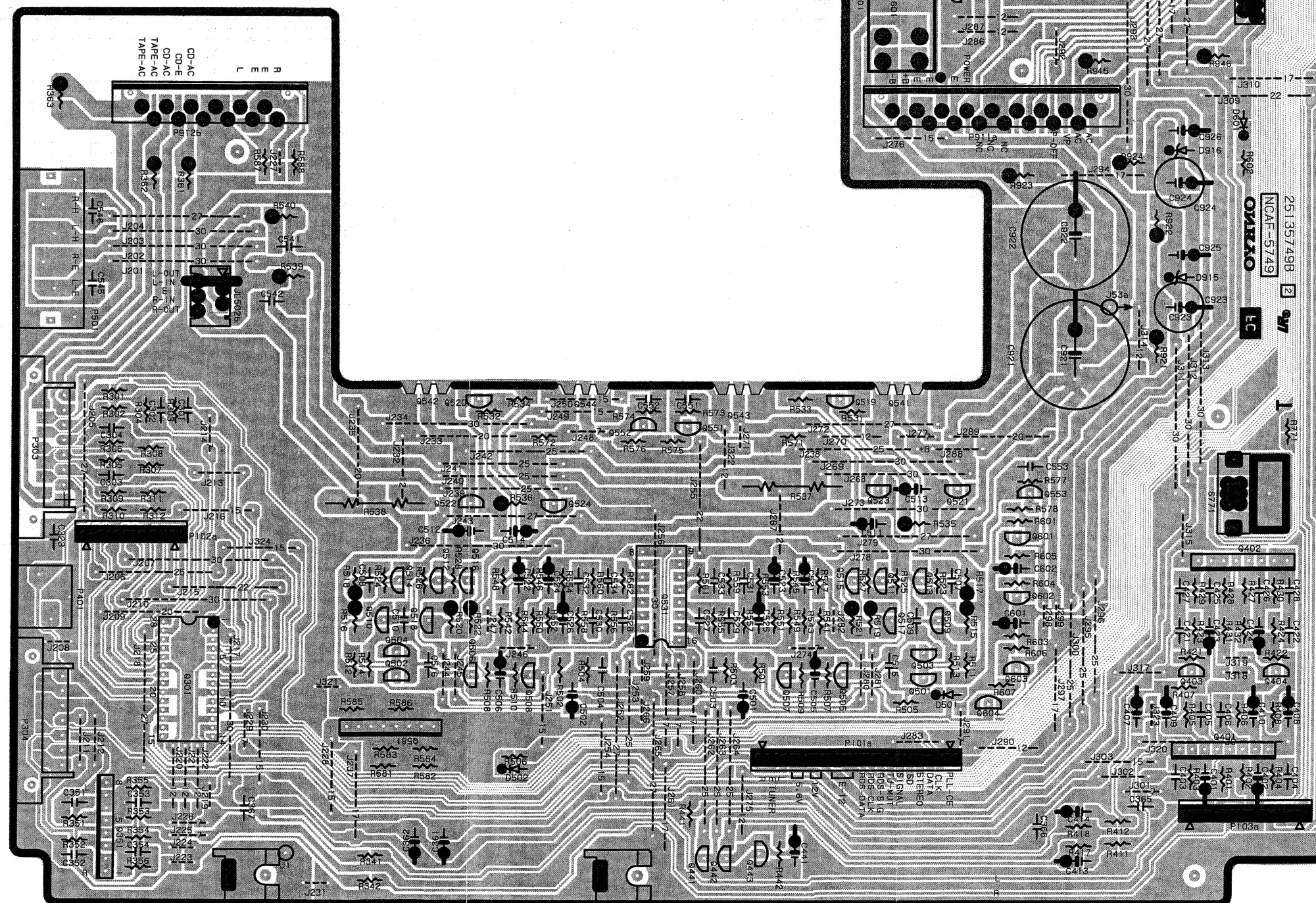
PC BORAD VIEWS FROM BOTTOM SIDE



VOLUME CIRCUIT PC BOARD

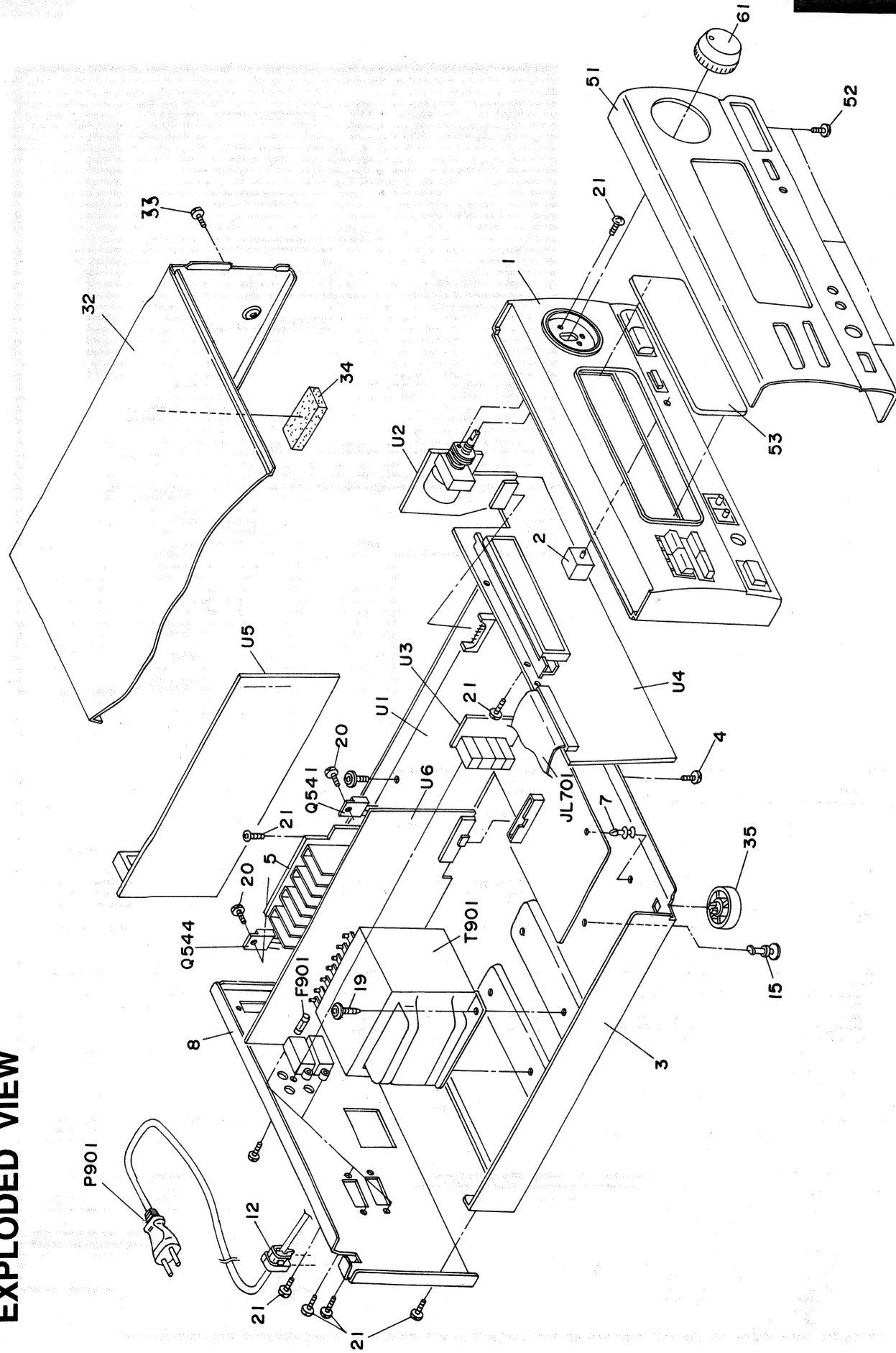


TERMINAL CIRCUIT PC BOARD



MAIN CIRCUIT PC BOARD

EXPLODED VIEW



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	27110943A	Front bracket	T901	2301038A	Δ NPT-1216P, Power transformer <P/T>
2	28198851	Facet	U1	2301039A	Δ NPT-1216DG, Power transformer <W>
3	27100287C	Chassis		1A693549-1B	NAAF-5749-1B, Main circuit pc board ass'y <P/T>
4	838130088	3TTB+8B, Self-tapping screw		1A693549-1C	NAAF-5749-1C, Main circuit pc board ass'y <W>
5	27160338A	Radiator		1A691549-2B	NAAF-5749-2B, Main circuit pc board ass'y <P/T>
7	27190524	Holder		1A691549-2C	NAAF-5749-2C, Main circuit pc board ass'y <W>
8	27122236A	Rear panel <P/T>	U2	1A693550-1B	NAETC-5750-1B, Volume circuit pc board ass'y <P/T>
	27122238A	Rear panel <W>		1A693550-1C	NAETC-5750-1C, Volume circuit pc board ass'y <W>
	27122237A	Rear panel <P/T>		1A691550-2B	NAETC-5750-2B, Volume circuit pc board ass'y <P/T>
	27122239A	Rear panel <W>		1A691550-2C	NAETC-5750-2C, Volume circuit pc board ass'y <W>
9	27190802	KGPS-14R, Holder	U3	1A693551-1B	NAETC-5751-1B, Terminal circuit pc board ass'y <P/T>
12	27300750	Δ Bushing, cord		1A693551-1C	NAETC-5751-1C, Terminal circuit pc board ass'y <W>
15	27190480	Holder		1A691551-2B	NAETC-5751-2B, Terminal circuit pc board ass'y <P/T>
19	830440089	4TTC+8C(BC), Self-tapping screw		1A691551-2C	NAETC-5751-2C, Terminal circuit pc board ass'y <W>
20	801433	3SMS8W SW+14(BC), Sems screw	U4	1A693554-1B	NADG-5754-1B, Display circuit pc board ass'y <P>
21	838130088	3TTB+8B, Self-tapping screw		1A693554-1C	NADG-5754-1C, Display circuit pc board ass'y <T>
32	28184565A	Top cover		1A693554-1D	NADG-5754-1D, Display circuit pc board ass'y <W>
33	838230088	3TTB+8B(NI), Self-tapping screw		1A691554-2B	NADG-5754-2B, Display circuit pc board ass'y <P>
34	28140555-1	Cushion		1A693154-2C	NADG-5754-2C, Display circuit pc board ass'y <P>
35	27175299A	Leg		1A693154-2D	NADG-5754-2D, Display circuit pc board ass'y <W>
51	27211844	Front panel <P>	U5	1A693555-1B	NARF-5755-1B, Tuner circuit pc board ass'y <P>
	27211849	Front panel <T/W>		1A693555-1C	NARF-5755-1C, Tuner circuit pc board ass'y <T>
	27211845	Front panel <P>		1A693555-1D	NARF-5755-1D, Tuner circuit pc board ass'y <W>
	27211843	Front panel <T/W>		1A691555-2B	NARF-5755-2B, Tuner circuit pc board ass'y <P>
	838130088	3TTB+8B, Self-tapping screw		1A691555-2C	NARF-5755-2C, Tuner circuit pc board ass'y <T>
52	28191746	Clear plate		1A691555-2D	NARF-5755-2D, Tuner circuit pc board ass'y <W>
53	28325363	Knob, VOL	U6	1A693556-1B	NAPS-5756-1B, Power supply circuit pc board ass'y <P>
F901	252075	Δ 2.5A-SE-EAK, Fuse <W>		1A693556-1C	NAPS-5756-1C, Power supply circuit pc board ass'y <T>
F902	252071	Δ 1.25A-SE-EAK, Fuse		1A693556-1D	NAPS-5756-1D, Power supply circuit pc board ass'y <W>
F903	252071	Δ 1.25A-SE-EAK, Fuse <P/T>		1A691556-2B	NAPS-5756-2B, Power supply circuit pc board ass'y <P>
JL701	2047371512	NCFC7-371512, Flat cable		1A691556-2C	NAPS-5756-2C, Power supply circuit pc board ass'y <T>
P901	253237HIT	Δ AS-CEE, Power supply cord		1A691556-2D	NAPS-5756-2D, Power supply circuit pc board ass'y <W>
Q541, Q542	2202303,	2SC4512-O,	U7	1A693556-1D	NAPS-5756-1D, Voltage selector pc board ass'y <W>
	2202304 or	2SC4512-Y or		1A691556-2D	NAPS-5756-2D, Voltage selector pc board ass'y <W>
	2202305	2SC4512-P, Transistor			
Q543, Q544	2202313,	2SA1726-O,			
	2202314 or	2SA1726-Y or			
	2202315	2SA1726-P, Transistor			

NOTE: THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

NOTE:
<P>:European model
<T>:Taiwanese model
<W>:Worldwide model

PRINTED CIRCUIT BOARD-PARTS LIST

CAUTION: Replacement of the transistor of mark *, if necessary, must be made from the same beta group (Hrr) as the original type.

NOTE: THE COMPONENTS IDENTIFIED BY MARK * ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

MAIN CIRCUIT PC BOARD (NAAF-5749-1B/1C/2B/2C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q301	22240800	TC9164AN, IC
Q351	22240247 or	BA15218N or
	22240293	NJM4558L-D <R-A7>
Q401	22240247 or	BA15218N or
	22240293	NJM4558L-D
Q531	22240605	TC9184P <R-A5>
Q921	222780125JRC	NJM78M12FA
Q922	222780565JRC	NJM78M56FA
	Transistors	
Q403, Q404	2213631 or	RN1241-A or
Q441, Q442	2213632	RN1241-B
Q443	2213580 or	RN2203 or
	2212600	DTA124ES
Q501~Q504	2211733 or	* 2SC1845-E or
	2211732	* 2SC1845-F
Q505~Q508	2213284	2SC1740S-R
Q509~Q514	2211353 or	2SA949-O or
	2211354	2SA949-Y
Q515, Q516	2211633 or	2SC2229-O or
	2211634	2SC2229-Y
Q517, Q518	2211255	2SC1815-GR
Q519, Q520	2213284	2SC1740S-R
Q521, Q522	2211653 or	2SC2235-O or
	2211654	2SC2235-Y
Q523, Q524	2211643 or	2SA965-O or
	2211644	2SA965-Y
Q541, Q542	2202303,	* 2SC4512-O,
	2202304 or	* 2SC4512-Y or
	2202305	* 2SC4512-P
Q543, Q544	2202313,	* 2SA1726-O,
	2202314 or	* 2SA1726-Y or
	2202315	* 2SA1726-P
Q551, Q552	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q553	2211793 or	2SA992-E or
	2211792	2SA992-F
Q591	2212285	2SC2878-A <R-A7>
Q601~Q603	2213284	2SC1740S-R
Q604	2213354	2SA933S-R
Q621	2213640 or	DTA123JS or
	2214660	RN1205
	Diodes	
D501, D502	223222,	WG713A,
D601, D621	223205 or	1SS270A or
	223163	1SS133
D915, D916	224470823	MTZJ8.2C, Zener
	Capacitors	
C361, C362	354780339	3.3 μ F, 50V, Elect.
C401, C402	354741009	10 μ F, 16V, Elect.
C407~C410	354781599	0.15 μ F, 50V, Elect.
C413, C414	354741009	10 μ F, 16V, Elect.
C441	354742209	22 μ F, 16V, Elect.
C501, C502	354780229	2.2 μ F, 50V, Elect.
C505, C506	354722219	220 μ F, 6.3V, Elect.
C511~C514	354741009	10 μ F, 16V, Elect.
C521, C522	354721019	100 μ F, 6.3V, Elect. <R-A5>
C523, C524	354721019	100 μ F, 6.3V, Elect. <R-A7>
	354741009	10 μ F, 16V, Elect. <R-A5>
C525, C526	354780229	2.2 μ F, 50V, Elect. <R-A5>
C527, C528	374721844	0.18 μ F \pm 5%, 50V, Plastic <R-A5>
C529, C530	371123334	0.033 μ F \pm 5%, 50V, Mylar <R-A5>

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C531, C532	371125624	5600pF \pm 5%, 50V, Mylar <R-A5>
C533, C534	371123334	0.033 μ F \pm 5%, 50V, Mylar <R-A5>
C541, C542	374724734	0.047 μ F \pm 5%, 50V, Plastic
C601	354721019	100 μ F, 6.3V, Elect.
C602	354783399	0.33 μ F, 50V, Elect.
C621	374722234	0.022 μ F \pm 5%, 50V, Plastic
C921, C922	3504260	4700 μ F, 40V, Elect.
C923, C924	354761019	100 μ F, 35V, Elect.
C925, C926	354743319	330 μ F, 16V, Elect.
C931	354762229	2200 μ F, 35V, Elect.
C932, C935	354761019	100 μ F, 35V, Elect.
C933, C936	354741009	10 μ F, 16V, Elect.
	Resistors	
R361~R363	453530104	1 Ω \pm 5%, 1/2W, Metal
R515~R518	443526804	68 Ω \pm 5%, 1/2W, Metal oxide
R519, R520	443525604	56 Ω \pm 5%, 1/2W, Metal oxide
R521, R522	443526804	68 Ω \pm 5%, 1/2W, Metal oxide
R535, R536	443521014	100 Ω \pm 5%, 1/2W, Metal oxide
R537, R538	4500027	MPC708-2WK, 0.22 Ω , Metal plate
R539, R540	453530824	8.2 Ω \pm 5%, 1/2W, Metal
R921, R922	443622714	270 Ω \pm 5%, 1W, Metal oxide
R923, R924	443623314	330 Ω \pm 5%, 1W, Metal oxide
R931, R932	443622204	22 Ω \pm 5%, 1W, Metal oxide
R933, R934	443621004	10 Ω \pm 5%, 1W, Metal oxide
R945, R946	443622204	22 Ω \pm 5%, 1W, Metal oxide

RL601	25065510	NRL-2P5A-DC095
	Plugs	
P101a	25055712	NPLG-20P668
JL502b	25055626	NPLG-5P588
P911a	25055665	NPLG-17P621
P912a	25055663	NPLG-12P619
P771	25055038	NPLG-2P29
	Sockets	
P102b	25051235	NSCT-10P1025
P103b	25051237	NSCT-12P1027
P303	25051247	NSCT-15P1037
P304	25051245	NSCT-13P1035 <R-A7>
P701a	25051303 or	NSCT-37P1092 or
	25050977	NSCT-37P764
	Terminals	
P401	25045481 or	NPJ-2PDBL299 or
	25045330	NPJ-2PDBL184
P501	25060226 or	NTM-4PDM148 or
	25060161	NTM-4PDM1087, Speaker
	Switch	
S771	25065414	NSS-2215S, Band <W>
	Radiators	
Q931a, Q932a	27160211	RAD68
	Screws	
Q931b, Q932b	82143010	3P+10FN(BC), Pan head

VOLUME CIRCUIT PC BOARD (NAETC-5750-1B/1C/2B/2C)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q451	22240322	LB1639, IC
D451	22380260 or	RL1N4003E or
	22380035	GP104003E, Diode
C452	354741009	10 μ F, 16V, Elect. capacitor
C453, C454	374724744	0.47 μ F \pm 5%, 50V, Plastic capacitor
R451, R452	5104383	N16RGL100KBT20F, Variable resistor
P103a	25055708	NPLG-12P664, Plug

TERMINAL CIRCUIT PC BOARD (NAAF-5751-1B/1C/2B/2C)

CIRCUIT NO.	PART NO.	DESCRIPTION
P102a	25055706	NPLG-10P662, Plug
P301, P302	25045305 or	NPJ-4PDBL164 or
	25045460	NPJ-4PDBL281, Terminal

DISPLAY CIRCUIT PC BOARD (NAAF-5754-1B/1C/1D/2B/2C/2D)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Remote sensor	
U701	24130011	PIC-12043TE2
	IC	
Q701	22241026	μ PD78044FGF-018
	FL tube	
Q702	212131	10-BT-136GK
	Transistors	
Q703	2213560 or	RN1204 or
	221282	DTC144ES
Q704	2213580 or	RN2203 or
	2212600	DTA124ES
	Diodes	
D701~D704	223222,	WG713A,
D706, D708	223205 or	1SS270A or
	223163	1SS133
D705	225292D	SEL4310G-D, LED
D707	224470562	MTZJ5.6B, Zener
D709	224470623	MTZJ6.2C, Zener
	Coil	
L701	233454K220	NCH-1452-220K
	Resonator	
X701	3010224	XTL-4.19M, Crystal
	Capacitors	
C701	353780229	2.2 μ F, 50V, Elect.
C702	3000076	EECS5R5T104, Super
C704	354741009	10 μ F, 16V, Elect.
C706	3060031	NTC-45P27, Trimming
C707	354741009	10 μ F, 16V, Elect.
C710	353761009	10 μ F, 35V, Elect.
C711	354781009	10 μ F, 50V, Elect.
	Sockets	
JL502a	25051089	NSCT-5P876
P701b	25051341 or	NSCT-37P1130 or
	25050943	NSCT-37P730
	Switches	
S751~S756	25035652	NPS-111-S604, Push
S761~S764	25035652	NPS-111-S604, Push
	Terminal	
P705	25045396	LGT1516-0101, Headphone
	Holder	
Q751a	27190943	FL tube

TUNER CIRCUIT PC BOARD (NARF-5755-1B/1C/1D/2B/2C/2D)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end	
U001	240089	FE415-G11
	ICs	
Q103	22240890	LA1836
Q131	22240090	LM7001
Q801	22240679	μ PC1346CS <P>
	Transistors	
Q101	2210746	2SC945A-P
Q102	2211723	2SC1923-O
Q104	2213224 or	2SC1740S-R or
	2212115	2SC2458-GR <P>
Q132	2212445	2SK365-GR

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q133	2213284 or	2SC1740S-R or
	2212115	2SC2458-GR
Q135, Q203	2214350 or	RN2202
	2213510	DTA114ES
Q201, Q202	2212794	2SD1468-R
	Diodes	
D101	224470753	MTZJ7.5C, Zener
D102, D104	223222,	WG713A,
	223205 or	1SS270A or
	223163	1SS133
D801	223222,	WG713A,
	223205 or	1SS270A or
	223163	1SS133 <P>
	Transformers and coils	
L101	233457	NFIF-4081
L102	233458	NFIF-4082
L121	233454K220	NCH-1452-220K
L151	232174	NMRF-5077, RF Block
L152	232139	NMIF-4062
L201, L202	233484	NMC-4085
L205	233383	NMC-6070
	Ceramic filters	
X101, X102	3010071	SFE10.7MA5, (RED)
X103	3010130	SFE10.7M22A
X152	3010123	SFZ-450JL
X153	3010076	BFU-450C
	Resonators	
X131	3010260	HC-49/U03, 7.2M, Crystal
X201	3010227	CSB456F15, Ceramic
X801	3010203	AF6146CG, Crystal <P>
	Capacitors	
C001, C122	354741019	100 μ F, 16V, Elect.
C121, C138	354780229	2.2 μ F, 50V, Elect.
C123	354784799	0.47 μ F, 50V, Elect.
C124, C125	354780109	1 μ F, 50V, Elect.
C135	354721019	100 μ F, 6.3V, Elect.
C137	371123334	0.033 μ F \pm 5%, 50V, Mylar
C139	354741019	100 μ F, 16V, Elect.
C140	354782299	0.22 μ F, 50V, Elect.
C151, C152	354741009	10 μ F, 16V, Elect.
C155, C204	354780229	2.2 μ F, 50V, Elect.
C156	354744709	47 μ F, 16V, Elect.
C157	371124724	4700pF \pm 5%, 50V, Mylar
C163	354786899	0.68 μ F, 50V, Elect.
C164	374724734	0.047 μ F \pm 5%, 50V, Plastic
C201	371121024	3300pF \pm 5%, 50V, Mylar
C203	354741009	10 μ F, 16V, Elect.
C205, C206	354741009	10 μ F, 16V, Elect.
C207, C208	374723315	330pF \pm 10%, 50V, Plastic
C209, C210	371122224	2200pF \pm 5%, 50V, Mylar <W>
	371121824	1800pF \pm 5%, 50V, Mylar <P/T>
C211, C212	354741009	10 μ F, 16V, Elect.
C803, C809	371124724	4700pF \pm 5%, 50V, Mylar <P>
C804	371122234	0.022 μ F \pm 5%, 50V, Mylar <P>
C805	371124734	0.047 μ F \pm 5%, 50V, Mylar <P>
C806	354780229	2.2 μ F, 50V, Elect. <P>
C807, C808	371123324	3300pF \pm 5%, 50V, Mylar <P>
C811	354721019	100 μ F, 6.3V, Elect. <P>
	Resistors	
R101	5210261	N06HR5KBC, Trimming
R801	5210263	N06HR20KBC, Trimming <P>
	Socket	
P101b	25051241	NSCT-20P1031

SPECIFICATIONS

CIRCUIT NO.	PART NO.	DESCRIPTION
	Plugs	
TP101	25055038	NPLG-2P29
P801	25055038	NPLG-2P29 <P>
	Terminal	
P105	25060222 or 25060117	NTM-2PDML144 or NTM-2PDML051

**POWER SUPPLY CIRCUIT PC BOARD
(NAAF-5756-1B/1C/1D/2B/2C/2D)**

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q622	2213640 or 2214660	DTC123JS or RN1205
Q901	2211455	2SA1015-GR
	Diodes	
D622	223222, 223205 or 223163	WG713A, 1SS270A or 1SS133 <R-A7>
D901	22380271 or 22380022	D3SBA20 or RBV402
D903-D910	22380260 or 22380035	RL1N4003E or GP104003E
D911	224471203	MTZJ12C
D912	224472704	MTZJ27D

	Capacitors	
C901	3500191	△ DE7150F 103M, IS<R-A7>
C906	354784709	47 μ F, 50V, Elect.
C908	354780339	3.3 μ F, 50V, Elect.
C909, C911	354781019	100 μ F, 50V, Elect.
C910	354771019	100 μ F, 63V, Elect.
C912, C913	354771019	100 μ F, 63V, Elect.
C916, C917	374721044	0.1 μ F \pm 5%, 50V, Plastic

	Cover, capacitor	
C901a	27301216	△ SB1925A <R-A7>
	Resistors	
R901	453534794	0.47 Ω \pm 5%, 1/2W, Metal
R902	443621024	1k Ω \pm 5%, 1W, Metal oxide
R904	443522704	27 Ω \pm 5%, 1/2W, Metal oxide
R941-R944	443622204	22 Ω \pm 5%, 1W, Metal oxide
	Fuseholders	
F901a	25050065	△ YSH403T <W>
F902a	25050065	△ YSH403T
F903a	25050065	△ YSH403T <W/T>
	Fuse label	
F901b	29361747	△ T2.54L 250V <W>
	Plug	
P901	25055675	NPLG-2P631
	AC outlet	
P902	25051638	△ NSCT-4P1425 <R-A7>
	25051637	△ NSCT-2P1424 <R-A5>
	Sockets	
P911b	25051054	NSCT-17P841
P912b	25051052	NSCT-12P839
	Relay	
RL901	25065520	NRL-1P10A-DC24

VOLTAGE SELECTOR PC BOARD (NASW-5757-1D/2D)

CIRCUIT NO.	PART NO.	DESCRIPTION
S903	25065437	△ NSS-22157P, Slide <W>

NOTE: <P>:European model only
 <W>:Worldwide model only
 <T>:Taiwanese model only
 <R-A5>: R-A5 only
 <R-A7>: R-A7 only

Tuner section:
FM:
Tuning Range:

European models:	87.5 - 108.0 MHz (50 kHz steps)
Worldwide models:	87.5 - 108.0 MHz (50 kHz steps) 87.9 - 107.9 MHz (200 kHz steps)

Usable Sensitivity:

Mono:	12.4 dBf, 1.2 μ V, 75 ohms 1.2 μ V (S/N 26 dB, 40 kHz Devi.) 75 ohms DIN
Stereo:	19.2 dBf, 2.5 μ V, 75 ohms 25 μ V (S/N 46 dB, 40 kHz Devi.) 75 ohms DIN

50 dB Quieting Sensitivity:

Mono:	18.2 dBf, 2.2 μ V, 75 ohms
Stereo:	38.2 dBf, 22 μ V, 75 ohms

Capture Ratio:

	1.5 dB
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Image Rejection Ratio:

	85 dB
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IF Rejection Ratio:

	90 dB
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Signal-to-Noise Ratio:

Mono:	73 dB
Stereo:	67 dB

Selectivity:

	50 dB DIN (\pm 300 kHz, 40 kHz Devi.)
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AM Suppression Ratio:

	50 dB
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Harmonic Distortion:

Mono:	0.25%
Stereo:	0.50%

Frequency Response:

	30 - 15,000 Hz \pm 1.5 dB
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Stereo Separation:

	40 dB at 1 kHz
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AM:
Tuning Range:

European models:	522 - 1611 kHz (9 kHz steps)
Worldwide models:	531 - 1602 kHz (9 kHz steps) 530 - 1710 kHz (10 kHz steps)

Usable Sensitivity:

	20 μ V
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Image Rejection Ratio:

	40 dB
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IF Rejection Ratio:

	40 dB
--	-------

Signal-to-Noise Ratio:

	50 dB
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Harmonic Distortion:

	0.8 %
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Amplifier section
Power Output:

30 watts per channel min. RMS. at 6 ohms both channels driven, from 40 Hz to 20 kHz with no more than 0.5% THD.

Continuous Power Output: 2 \times 35 watts at 6 ohms, 1 kHz (DIN)

Total Harmonic Distortion: 0.5% at rated power

IM Distortion: 0.5% at rated power

Damping Factor: 40 at 6 ohms

Frequency Response: 40 - 20,000 Hz \pm 3 dB

Sensitivity and Impedance:

Line-1, Line-2, MD Play: 150 mV/50 kohm

MD Rec: 150 mV/2.2 kohms

Signal-to-Noise Ratio:

MD: 100 dB (IHF-A)

Tone Controls:

Advanced Super Bass: + 10 dB at 60 Hz

Bass: \pm 10 dB at 100 Hz (R-A5 Only)

Treble: \pm 10 dB at 10 kHz (R-A5 Only)

Muting: - 45 dB

General
Power Supply:

European model: AC 230 V, 50 Hz

Worldwide models: AC 120 and 220 V switchable, 50/60Hz

Dimensions: 275 (W) \times 119.5 (H) \times 321 (D) mm
10-13/16" \times 4-11/16" \times 12-11/16"

Mass: 5.3 kg (11.7 lbs.)

Design and specifications are subject to change without prior notice.

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